

New faunistic records of the families Bolitophilidae and Keroplatidae (Diptera, Sciaroidea) from Morocco

Ouafaa Driauach^{1,2}, Peter J. Chandler³,
Mohamed Amin El Mouden¹, Boutaina Belqat¹

1 LESCIB URL/CNRST N°18, FS, Abdelmalek Essaadi University, Tetouan, Morocco **2** Biotechnology, Environmental Technology and Valorization of Bio-Resources Team, FSTH, Abdelmalek Essaadi University, Tetouan, Morocco **3** 606B Berryfield Lane, Melksham, Wiltshire SN12 6EL, UK

Corresponding author: Boutaina Belqat (belqat@gmail.com)

Academic editor: Marc De Meyer | Received 19 April 2022 | Accepted 28 September 2022 | Published 7 November 2022

<https://zoobank.org/ADA965F5-57D6-439F-BCB3-025DB7FB399A>

Citation: Driauach O, Chandler PJ, Amin El Mouden M, Belqat B (2022) New faunistic records of the families Bolitophilidae and Keroplatidae (Diptera, Sciaroidea) from Morocco. ZooKeys 1128: 47–52. <https://doi.org/10.3897/zookeys.1128.85536>

Abstract

The family Bolitophilidae is recorded for the first time from Morocco with one species *Bolitophila* (*Bolitophila*) *saundersii* (Curtis, 1836). Ten new species are added to the Moroccan fauna of Keroplatidae, known until now by only two species, raising the number of species currently known in Morocco to 12.

Keywords

Biodiversity, fungus gnats, new records

Introduction

The Keroplatidae are among the larger and most conspicuous fungus gnats. The family has a worldwide distribution, with about 1000 species belonging to 90 genera (Pape et al. 2011).

Keroplatids are commonly found in moist forests, but also in other ecosystems, where they are often associated with fungi, rotten wood, and similar substrates. Their larvae live in webs and either feed on fungal spores or are predaceous on small invertebrates caught in their webs. The webs may include droplets of fluid containing oxalic acid which immobilises prey. Adults are often found in dark, humid places, including caves. Keroplatids

can be collected by sweeping in low vegetation, under hanging rocks, tree trunks, and along stream banks. They are also frequently caught in Malaise traps (Evenhuis 2006).

The Bolitophilidae is a small family of fungus gnats, currently comprising 61 extant species in a single genus, *Bolitophila* Meigen, 1818, which has two subgenera, *Bolitophila* s. str. and *Cliopisa* Enderlein, 1936 (Bechev and Chandler 2011). This is a principally Holarctic family, with only one species previously recorded from North Africa, in Algeria (Burghele-Balacesco 1966). Their larvae develop internally in soft fungi.

The fungus gnats of the families Bolitophilidae and Keroplatidae of Morocco are practically unstudied. This paper is the first contribution to specifically treat both families from Morocco. The family Bolitophilidae is recorded for the first time from Morocco by one species *Bolitophila* (*Bolitophila*) *saundersii* (Curtis, 1836). The Moroccan fauna of keroplatids was represented by only two species, *Macrocera fasciata* Meigen, 1804 (Becker and Stein 1913; Chandler and Ribeiro 1995; Evenhuis 2006; Kettani et al. 2022) and *Keroplatus reaumurii* (Dufour, 1839) (Matile 1986; Chandler et al. 2006; Evenhuis 2006). The new findings increase the number of Moroccan keroplatids to 12. Of the 10 species recorded from Morocco for the first time, six are new to North Africa.

Material and methods

A total of 25 specimens of Keroplatidae were collected by sweeping. Between 2013 and 2022, 15 sites were sampled in mountainous areas, such as the Rif and the High Atlas.

Most of the material was collected by B. Belqat and O. Driauach, and Dr M. Ebejer provided additional material was that he had collected. All the material is preserved in 70% ethanol and was identified by P. Chandler. A list of sampling sites, with coordinates and altitudes, is given in Table 1. General and North African distributions of the species are separately given.

Table 1. Sampling sites (in alphabetical order) harbouring the species collected in Morocco, in the present study, with localities, geographical coordinates and elevations.

Station	Locality	Elevation (m)	Geographical coordinates
RIF			
Aïn Ras El Ma	Majjou	856	35°06.873'N, 5°11.388'W
Bab Rouida	Parc National Talassemthane	1512	35°06.881'N, 5°08.270'W
Daya Amsemlil	Jbel Bouhachem	1059	35°15.596'N, 5°25.917'W
Douar Belwazen	Belwazen	176	35°40.368'N, 5°25.116'W
Lower Loukkos saltmarsh	5 km E of Larache	2	35°12.274'N, 6°08.222'W
Halouma Kitane	Kitane, Tétouan	140	35°31.912'N, 5°19.861'W
Jbel Zemzem	Jbel Zemzem	216	35°45.457'N, 5°22.189'W
Marabout El Khaloua	Dar Khennouss	788	35°29.039'N, 5°20.678'W
Maison forestière	Parc National Talassemthane	1674	35°08.076'N, 5°08.262'W
Oued Aârate	Dardara	269	35°07.381'N, 5°17.456'W
Oued Majjou	Majjou Village	799	35°06.186'N, 5°10.935'W
Oued Tizga	Amsa	516	35°26.237'N, 5°13.694'W
Oued Sahel	Ben Karrich, Tétouan	40	35°29.238'N, 5°26.352'W
Oued Sidi Yahya Aârab	Sidi Yahya Aârab	62	35°17.545'N, 4°53.503'W
High Atlas			
Douar Akhlij Tnine Ourika	Ourika, Marrakech	870	31°22.385'N, 7°46.608'W

List of species

Family Bolitophilidae

Genus *Bolitophila* Meigen, 1818

Bolitophila saundersii (Curtis, 1836)

Material examined: Daya Amsemlil, 1 ♂ 1 ♀, 26 Mar. 2016.

General distribution: Palaearctic.

North African distribution: Algeria. **New record for Morocco.**

Family Keroplatidae

Subfamily Macrocerinae

Genus *Macrocera* Meigen, 1804

Macrocera fasciata Meigen, 1804

Material examined: Aïn Ras El Ma, 1 ♂, 1 ♀, 27 Mar. 2013.

General distribution: Palaearctic.

North African distribution: Morocco.

Macrocera nigricoxa Schiner, 1863

Material examined: Oued Aârate, 2 ♂♂, 26 Mar. 2014; Oued Sahel, 1 ♂, 5 Apr. 2014.

General distribution: Palaearctic.

North African distribution: first record for Morocco and North Africa.

Macrocera phalerata Meigen, 1818

Material examined: Daya Amsemlil, 1 ♂, 23 Apr. 2016.

General distribution: Palaearctic.

North African distribution: Tunisia. **First record for Morocco.**

Macrocera pusilla Meigen, 1830

Material examined: Lower Loukkos saltmarsh, 4 ♀♀, 10 May 2012, Ebejer Leg.

General distribution: Palaearctic.

North African distribution: Algeria and Tunisia. **First record for Morocco.**

Subfamily Keroplatinae Rondani, 1856**Tribe Keroplatini Rondani, 1856****Genus *Keroplatus* Bosc, 1792*****Keroplatus reaumurii* (Dufour, 1839)**

Material examined: Douar Belwazen, 1 ♂, 2 Feb. 2022.

General distribution: Palaearctic.

North African distribution: Morocco.

Tribe Orfeliini Malloch, 1917**Genus *Antlemon* Loew, 1871*****Antlemon halidayi* Loew, 1871**

Material examined: Daya Amsemlil, 1 ♂, 23 Apr. 2016; Halouma Kitane, 1 ♂, 1 Jan. 2015; Oued Majjou, 3 ♂♂, 9 Apr. 2013.

General distribution: Palaearctic.

North African distribution: Algeria and Tunisia. **First record for Morocco.**

***Antlemon servulum* (Walker, 1836)**

Material examined: Bab Rouida, 1 ♂, 17 Jun. 2014.

General distribution: Palaearctic.

North African distribution: first record for Morocco and North Africa.

Genus *Macrorrhyncha* Winnertz, 1846***Macrorrhyncha gallica* Chandler & Blasco-Zumeta, 2001**

Material examined: Maison forestière, 1 ♂, 7–17 Jun. 2014, Malaise trap.

General distribution: Europe.

North African distribution: first record for Morocco and North Africa.

Genus *Neoplatyura* Malloch, 1928***Neoplatyura biumbrata* (Edwards, 1913)**

Material examined: Douar Arikji Ltnin Ourika, 1 ♂, 28 Apr. 2015; Jbel Zemzem, 1 ♂, 17 Apr. 2014.

General distribution: Europe.

North African distribution: first record for Morocco and North Africa.

***Neoplatyura nigricauda* (Strobl, 1893)**

Material examined: Marabout El Khaloua, 1 ♂, 3 Jun. 2018.

General distribution: Palaearctic.

North African distribution: Tunisia. **First record for Morocco.**

Genus *Orfelia* Costa, 1857***Orfelia persimilis* Caspers, 1991**

Material examined: Bouhachem, 1 ♂, 14 Jul. 2013; Oued Tizga, 1 ♂, 25 Jun. 2014; Oued Sidi Yahya Aârab, 1 ♂, 25 Apr. 2015.

General distribution: Europe.

North African distribution: first record for Morocco and North Africa.

Genus *Pyratula* Edwards, 1929***Pyratula ebroensis* Chandler & Blasco-Zumeta, 2001**

Material examined: Maison forestière, 1 ♂, 7 Jun. 2014.

General distribution: Europe.

North African distribution: first record for Morocco and North Africa.

Acknowledgements

We are grateful to Dr Martin Ebejer who kindly provided material that he collected in Morocco and for permitting us to publish his new records. We also warmly and sincerely thank Dr Paul Beuk for his support to our PhD students and his continues help in identifying species of some Diptera families. We thank the reviewers and editor, Dr. Marc De Meyer, for their constructive comments on the manuscript.

References

- Bechev D, Chandler PJ (2011) Catalogue of the Bolitophilidae and Diadocidiidae of the World (Insecta: Diptera). Zootaxa 2741(1): 38–58. <https://doi.org/10.11646/zootaxa.2741.1.2>
- Becker T, Stein P (1913) Dipteren aus Marokko. Annuaire du Musée zoologique de l'Académie impériale de Sciences de St.-Petersbourg 18: 62–95.
- Burghele-Balacesco A (1966) Les Mycetophilidae (Diptères) cavernicoles de la collection Biospeologica (IV^e–VIII^e séries des “Grottes visitées”). International Journal of Speleology 2(4): 319–334. <https://doi.org/10.5038/1827-806X.2.4.3>

- Chandler PJ, Ribeiro E (1995) The Sciaroidea (Diptera) (excluding Sciaridae) of the Atlantic Islands (Canary Islands, Madeira and the Azores). *Boletim do Museu Municipal do Funchal* (Suplemento 3): 1–170. [História Natural]
- Chandler PJ, Bechev DN, Caspers N (2006) The fungus gnats (Diptera: Bolitophilidae, Diadocidiidae, Ditomyiidae, Keroplatidae and Mycetophilidae) of Greece, its islands and Cyprus. *Studia Dipterologica* 12: 255–314.
- Evenhuis NL (2006) Catalog of Keroplatidae of the World (Insecta: Diptera). *Bishop Museum Bulletin in Entomology* 13: 1–178.
- Kettani K, Ebejer MJ, Ackland DM, Bächli G, Barraclough D, Barták M, Carles-Tolrá M, Černý M, Cerretti P, Chandler P, Dakki M, Daugeron C, De Jong H, Dils J, Disney H, Droz B, Evenhuis N, Gatt P, Graciolli G, Grichanov IY, Haenni J-P, Hauser M, Himmi O, Macgowan I, Mathieu B, Mouna M, Munari L, Nartshuk EP, Negrobov OP, Oosterbroek P, Pape T, Pont AC, Popov GV, Rognes K, Skuhrová M, Skuhrový V, Speight M, Tomasovic G, Trari B, Tschorsnig H-P, Vala J-C, von Tschirnhaus M, Wagner R, Whitmore D, Woźnica AJ, Zatwarnicki T, Zwick P (2022) Catalogue of the Diptera (Insecta) of Morocco—An annotated checklist, with distributions and a bibliography. *ZooKeys* 1094: 1–466. <https://doi.org/10.3897/zookeys.1094.62644>
- Matile L (1986) L'identité du “ver de la tipule de l'Agaric” de Réaumur, et notes taxonomiques sur les *Keroplatus* paléarctiques (Diptera, Mycetophiloidea, Keroplatidae). *Annales de la Société Entomologique de France* 22: 353–367.
- Pape T, Blagoderov V, Mostovski MB (2011) Order Diptera Linnaeus, 1758. In: Zhang ZQ (Ed.) *Animal biodiversity: an outline of higher-level classification and survey of taxonomic richness*. *Zootaxa* 3148: 222–229. <https://doi.org/10.11646/zootaxa.3148.1.42>